

HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED ZEN WIND ENERGY FACILITY, TULBAGH MAGISTERIAL DISTRICT, WESTERN CAPE

(Assessment conducted under Section 38 (8) of the
National Heritage Resources Act (No. 25 of 1999) as part of an EIA)

Prepared for

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EXECUTIVE SUMMARY

ACO Associates was appointed by Savannah Environmental (Pty) Ltd to assess the potential impacts to heritage resources that might arise through construction of the Zen wind energy facility (WEF) on seven farm portions between Gouda and Saron in the Western Cape Province. The Zen WEF would include wind turbines with foundations and gravel work areas, underground and overhead cables, connecting roads and a substation.

Heritage Western Cape requested assessment of impacts to the built environment, historic settlements, scenic routes, cultural landscapes and archaeology and asked for provisional grading of heritage resources.

The site is predominantly under dry-land agriculture (wheat) and is also used for grazing. The study area is relatively flat but includes minor undulations. It rises significantly in the extreme east where it meets the mountains. The site lies on both sides of the Klein Berg River and the Berg River forms its western margin.

A three-day field survey of the site revealed Early Stone Age archaeological resources in variable densities, built environment heritage in two parts of the study area (both farm werfs) and also in the nearby historical settlement of Saron as well as cultural landscapes and scenic routes.

The archaeological resources are of limited significance and, if they cannot be avoided, they could be very easily mitigated. The identified heritage structures will be subjected to visual impacts to their context but they are not of sufficient merit to warrant very large buffers. Medium significance impacts are expected to the context of the Saron mission settlement. These impacts could be reduced to low significance through excluding turbines located on high ground close to the village and relocating them to lower ground further away. The settlement is also the most significant cultural landscape in the area and would similarly benefit from this mitigation. The other cultural landscape is the Swartland agricultural area but, due to its size and the clustering of this and other similar developments, the impacts to it are considered not to be new and will not be significantly increased through the proposed new development. Scenic routes will be variably affected but, as with the Swartland landscape, the clustering of turbines helps contain impacts and no new types of impacts will be experienced.

Based on the layout assessed here, impacts to heritage resources are not likely to be very significant and no "red flag" issues have been identified. Archaeological resources of medium to low significance will be directly impacted, while buildings, cultural landscapes and scenic routes will all receive indirect impacts of medium to low significance. It is recommended that, subject to the agreement of Heritage Western Cape, the proposed project should be allowed to proceed. However, the following conditions should be adhered to:

- If any change to the layout is made pre-construction then a follow-up inspection of the new layout should be made, particularly for archaeological resources which are point-specific on the landscape;
- If possible, turbines on high ground within close visual proximity to Saron should be relocated to less prominent positions;
- Buffers around historical houses should be a minimum of 500 m but preferably as large as possible;
- The final layout should seek to be as consolidated as possible in order to maintain a tight cluster with the other proposed facilities in the area (the present layout does this quite well); and
- If any burials are encountered during any stage of the development then work in the immediate vicinity should be stopped, the remains protected and the finds reported to HWC or an archaeologist. Exhumation would be required at the expense of the developer.

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1. INTRODUCTION

ACO Associates was appointed by Savannah Environmental (Pty) Ltd to assess the potential impacts to heritage resources that might arise through construction of the Zen wind energy facility (WEF) on seven farm portions between Gouda and Saron in the Western Cape Province (Figure 1). The affected farm portions are as follows:

- Kleinberggrivier 1 portion 4 (189.0206 ha);
- Bonne Esperance 83 portion 1 (1338.4515 ha);
- Bonne Esperance 83 portion 2 (554.2158 ha);
- Moolenaars Drift 85 remainder (1013.9586 ha);
- Moolenaars Drift 85 portion 1 (88.1139 ha); and
- Hartebeestekraal 88 portion 8 (170.7188 ha);

The proposed WEF would include the following components:

- Up to 46 wind turbines of up to 110 m hub height;
- Concrete bases to support the turbine towers;
- Gravel working areas at the base of each turbine;
- Underground cables linking the turbines;
- One substation on site;
- Internal access roads running between the turbines; and
- New overhead power lines to link to a nearby substation.

A Notification of Intent to Develop (NID) was submitted to Heritage Western Cape (HWC). HWC responded with their requirements for the Heritage Impact Assessment (HIA). HWC specifically requested assessment of impacts to the following heritage resources:

- Built environment;
- Historic settlements;
- Scenic routes;
- The cultural landscape; and
- Archaeology.

They also requested that the heritage resources be graded. The present report aims to meet these requirements.

2. HERITAGE LEGISLATION

The National Heritage Resources Act (NHRA) No. 25 of 1999 protects a variety of heritage resources including palaeontological, prehistoric and historical material (including ruins) more than 100 years old (Section 35), human remains older than 60 years and located outside of a formal cemetery administered by a local authority (Section 36) and non-ruined structures older than 60 years (Section 34). Landscapes with cultural significance are also protected under the definition of the National Estate (Section 3 (3.2d)). Section 38 (2a) states that if there is reason to believe that heritage resources will be affected then an impact assessment report must be submitted. This report fulfils that requirement.

Since the project is subject to an Environmental Impact Assessment (EIA), Heritage Western Cape is required to provide comment on the proposed project in order to facilitate final decision making by the Department of Environmental Affairs and Development Planning (DEA&DP).

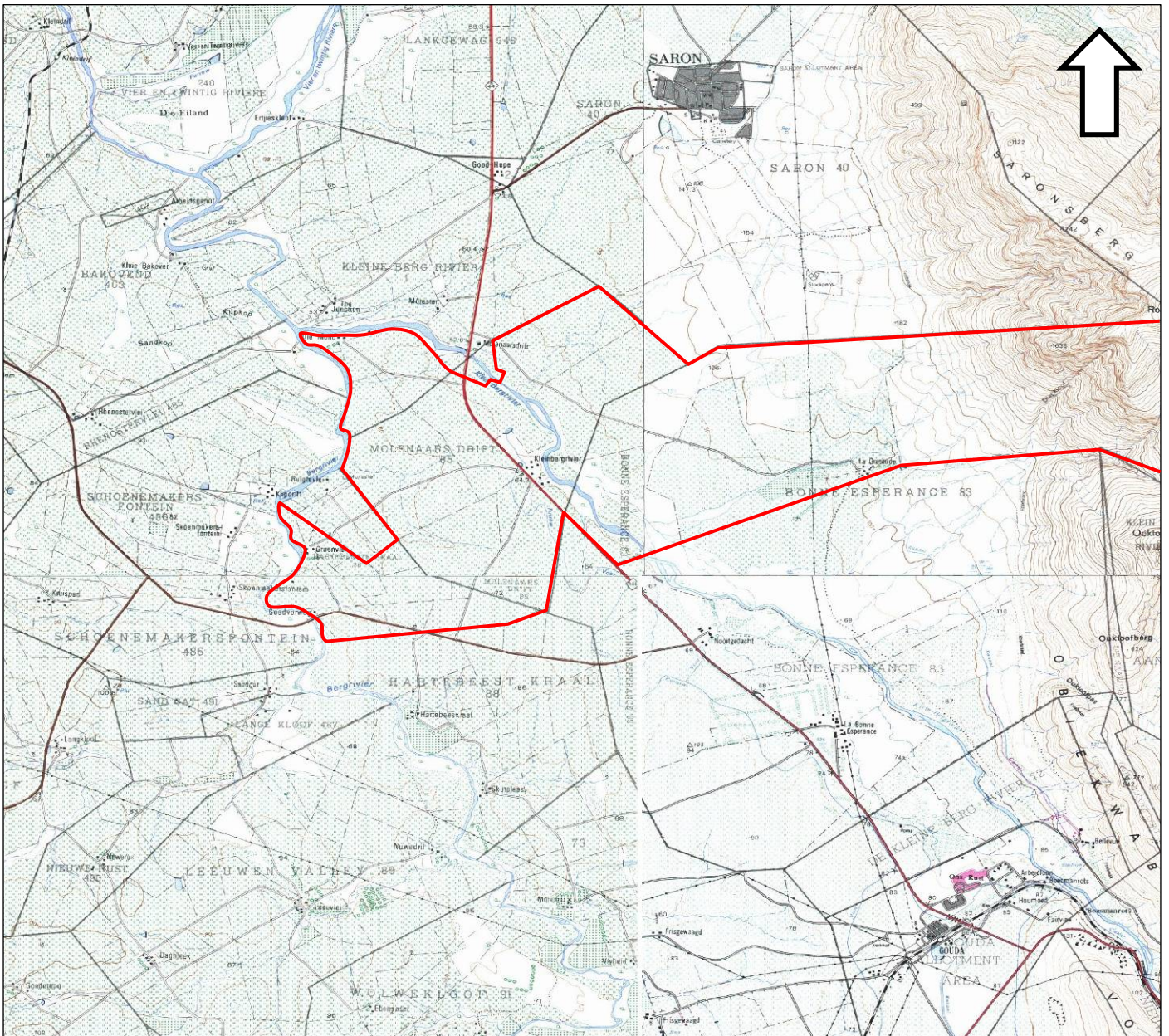


Figure 1: Map of the vicinity around Gouda (in the south) and Saron (in the north) showing the boundary of the study area (red polygon). The eastern end of the properties is just out of picture in the high mountains.

3. METHODS

3.1. Literature survey

A survey of available literature was carried out to assess the general heritage context into which the development was to be set. This literature included published material and unpublished commercial reports. The information so gained was used to inform the field survey.

3.2. Field survey

Three days (31st October to 2nd November 2012) were spent on site examining the turbine locations and the general surroundings of the proposed WEF. The landscape and heritage resources were recorded photographically and GPS co-ordinates were taken to locate specific heritage resources.

3.3. Grading

Provisional grading of the heritage resources was requested by HWC and, to this effect, the guidelines suggested by Winter and Baumann (2005: box 5) have been consulted.

3.4. Impact assessment

The impact assessment was done following a standardised scale provided to the specialists by Savannah Environmental.

3.5. Limitations

Several parts of the study area were being harvested at the time of study and these areas could not be physically examined. In other areas, where harvesting was partly completed, there was still too much straw on the ground for good visibility. Other areas were fallow and visibility was better. Overall, the limitations on visibility are unlikely to significantly affect the outcome of the study.

4. DESCRIPTION OF THE AFFECTED ENVIRONMENT

The site is almost entirely under cultivation but a strip through the middle, running north-south, contains the Klein Berg River and a few small patches in the easternmost areas are partly recovered fynbos. The Berg River forms the western-most boundary of the site while in the east the site extends to the summit of the Saronsberg Mountains – this elevated land east of the canal is, however, completely excluded from the study. The topography is largely flat but includes some gently undulating land with rivers and small streams running through it. There is a general rise towards the east near the foot of the Saronsberg. Tall vegetation is generally absent with the exception of a few indigenous trees along a small water course in the west and gum and other trees around the farm houses and along the rivers.

The substrate was quite variable from very fine shale soil with fragmented shale fragments to densely-packed cobbles. The majority was shale soil with scattered cobbles in varying densities. Ground cover also varied greatly from fallow fields with minimal or much vegetation cover to fields that were either partly harvested or still coated in wheat. As such ground visibility varied considerably.

Figures 2 to 8 illustrate the range of surface conditions and appearances within the study area.



Figure 2: Wheat lands to the west of the R44.



Figure 3: View towards the west from Turbine 44.



Figure 4: A small stream running through the western part of the site towards the Berg River (behind the trees in the distance).



Figure 5: Fallow fields.



Figure 6: Fallow and overgrown fields.



Figure 7: Partially harvested fields.



Figure 8: Unharvested wheat.

5. HERITAGE CONTEXT

5.1. Palaeontology

The study area is underlain by deposits of the Malmesbury Group (low-lying areas) and Cape Supergroup (mountains). According to Almond and Pether (2008) the Malmesbury Group is of low palaeontological significance with no fossils recorded as yet. The Cape Supergroup rocks contain several units with varying palaeontological significance. Generally, the shale units have higher significance than the sandy units but are not well represented in the study area. The lowest rocks, if present, would be Piekenierskloof Formation conglomerates (J. Compton, pers. comm., 2010), while Peninsula Sandstone would overlie them. Norman and Whitfield (2006:fig. 19) show that the more significant Cederberg shale only occurs in the very high reaches of the mountains where turbines would not be constructed. The only shale unit that might be present lower down is the Graafwater Formation, which occurs between the Piekenierskloof and Peninsula Sandstone Formations, but this would be very thin here if present at all.

5.2. Pre-colonial archaeology

Only two archaeological research projects have been carried out in the nearby vicinity. One involved a survey of the Swartland area around Porterville (Hart, 1984, 1987), while the second saw two small rock shelters being excavated (Smith *et al.*, 1991) with a view to exploring the relationship between hunter-gatherers and herders in the south-western Cape. A few impact assessments have also been conducted (Orton, 2008a, 2008b, 2010; Webley & Hart, 2010). These studies inform the following archaeological review.

The earliest period of pre-colonial archaeology present in the region is the Early Stone Age (ESA) which occurred until about 200 000 years ago. Artefacts pertaining to this period of prehistory are commonly encountered all along the western edge of the Cape Fold Belt Mountains. Most often they are associated with river terraces where the cobbles served as a source of stone material for manufacture of the artefacts. Such artefacts have been recorded in the vicinity of the study area where Hart (1984, 1987) found ESA artefacts to be closely associated with rivers and focused on stony hills and ridges. Orton (2008b) found ESA artefacts scattered in farmland on the lower mountain slopes between Saron and Porterville, while closer to Gouda extensive ESA scatters were found near the base of the mountain (Orton 2010). Webley and Hart (2010) found no archaeology in an area to the southwest of Gouda, but in the town Orton (2008a) found a large number of ESA artefacts. These artefacts were suggested to be in primary context with many exposed by the excavation of the canal system in the area. As such they are of greater research value.

After 200 000 years ago and extending up until some 40 000 to 20 000 years ago is the Middle Stone Age (MSA). Hart (1984, 1987) records the occurrence of MSA artefacts in similar locations to ESA ones throughout his study area. No other reports of MSA artefacts are known.

The Later Stone Age (LSA) extends from the end of the MSA until the arrival of European colonists some 350 years ago. By far the majority of archaeological sites found in South Africa pertain to the last 5000 years. The two small rock shelter excavations conducted by Smith *et al.* (1991) yielded material demonstrating that the area was certainly used by the San and the Khoekhoen. The latter only appeared in South Africa within the last 2000 years, although the exact time of arrival is still very much under debate. The Voelvlei rock shelter had three radiocarbon dates conducted with the upper two being in the 15th and 16th centuries and the oldest one, from the base of the site, falling within the 2nd century AD. This last is claimed by the authors to be from a level predating the introduction of pottery to the site. Driebos was never dated but the finds suggest material of a similar age (Smith *et al.*, 1991).

The rock shelter excavations were conducted as part of Smith's wider interest in the origins of the herding economy in the Western Cape. He proposed that the Khoekhoen moved between winter pastures at the coast (specifically the Vredenburg Peninsula) to summer pastures inland (Smith, 1983, 1984). The latter would have been on the Malmesbury shales where the nutritious

Renosterveld vegetation grew. His cycle of transhumance passed through the Gouda area, following the course of the Great Berg River (Figure 9).

It was largely to test Smith's (1983, 1984) hypothesis that Hart (1984) conducted his extensive survey of the region around Porterville and Saron. His success was limited, with just 16 LSA sites being found in the areas searched. Most were very ephemeral and all but one lay in ploughed land. The artefacts were generally very informal and likely indicate considerable expediency in manufacture. Few conclusions could be drawn from the results of the survey, but they do show quite clearly that LSA material is widely found out in the open, away from rock shelters.

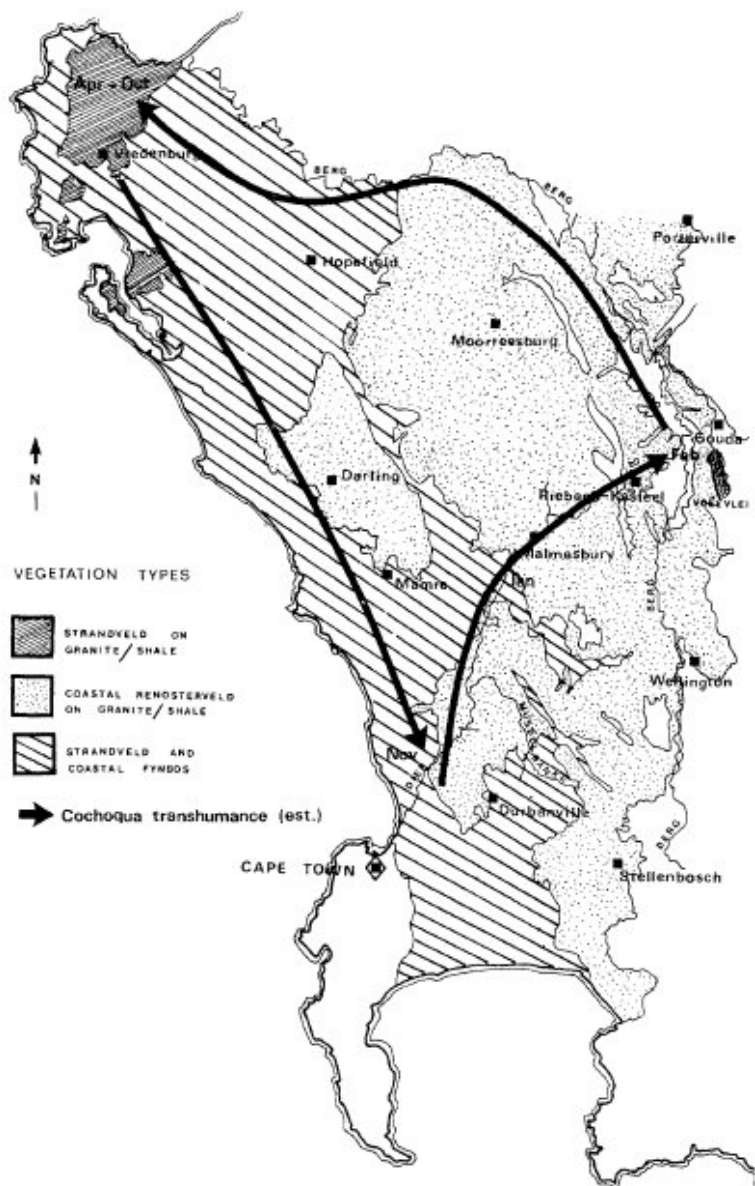


Figure 9: Estimation of the route of seasonal transhumance used by the south-western Cape Khoekhoen. The stippled area denotes Renosterveld which was suggested to have been important for summer grazing. Gouda and the Voelvllei Dam lie at middle right (source: Smith 1984: fig. 1).

Whether the Nuwekloof was used in pre-colonial times as a major thoroughfare is unknown, but the one clue we do have is that Pieter Potter, the first European to set foot in the kloof, was unable to find his way through and reported that no path existed (Mossop, 1927).

Rock art is present in the area with both the shelters documented by Smith *et al.* (1991) containing art. Furthermore, although this is subject to confirmation in the field, there is a rocky

outcrop labelled on maps as “Boesmanrots¹” just east of the town and which may contain rock art. Mossop (1927) describes the rock but mentions no art. Several rock art sites are reported to occur in the region around Porterville (SA-Venues, 2010) with the famous European galleon being a notable inclusion (Parkington, 2003). It is reported that Thomas Bain discovered rock art sites in the vicinity of Nuwekloof when he was building the pass (Storror & Komnick, 1984). The precise age of rock paintings is unknown but those with European content, such as the galleon, clearly indicate that the tradition of painting on the walls of rock shelters and boulders continued into the colonial period.

5.3. Colonial period

5.3.1. Regional development

The distinct character and vast amount of heritage present in Tulbagh generally overshadows the history of the smaller surrounding towns. Tulbagh was founded in 1743 when a church was built at the suggestion of Baron Gustaf Willem van Imhoff, the newly appointed governor of the Netherlands Indies, who was visiting the Cape. It was several generations, though, until the settlement developed into a town (Fransen, 2006). The name “Tulbagh” was only given in 1805 to replace the original “Roodezand” (Ross, 2002). The smaller towns to the west all came about in later years as shown in Table 1.

Table 1: Origins of towns in the vicinity of Gouda (Fransen 2006).

Town	Founding date	Type of town
Tulbagh	1743	Church town
Saron	1846	Mission settlement
Riebeek-West	1855	Church town
Porterville	1863	Church town
Riebeek Kasteel	1863	Church town

5.3.2. Development of Saron and Gouda

Saron began as a mission station in the mid-19th century. The Reverend JH Kulpmann started the mission station on a farm called De Leeuwenklip in 1846 and six years later it fell under the control of the Rhenish Mission Society with a church inaugurated one year later (Fransen, 2006).

Gouda does not feature in Fransen’s (2006) list of towns originating prior to 1900 and a map of the south-western Cape dating from circa 1902 shows nothing in the vicinity of Gouda². The town started on a farm named Gouda and various origins of the name have been suggested. All share the notion of the word being Khoekhoen. It may have been from a word meaning “antelope” or “honey kloof” (Western Cape Tourism, 2007). The former meaning is also mentioned by Nienaber and Raper (1977) who mention the use of the “Bushman Rock³” as a lookout point to scan the area for antelope to hunt. Other sources point towards a meaning along the lines of a dirty road or one with dung or faeces on it. They are certain, however, that the name does not relate to the town of that name in the Netherlands.

A precise date for the beginnings of the settlement at Gouda is unknown but it initially served as a railhead for Porterville until the new line linking Porterville with Riebeek West through Hermon was

¹ But see an alternative origin of this name alluded to in Section 5.3.2 below.

² Untitled map held in the UCT Dept of Archaeology collection.

³ Referred to in Section 5.2 above.

constructed in 1929 (Siyabona Africa Travel, 2008). Prior to this the settlement was known as Porterville Road⁴. While all of the northern part of the town is relatively recent, a number of the houses in the southern part are likely more than 60 years of age and thus included as protected heritage.

In recent years the town has been used as a centre for fruit packing with a large warehouse having been built in the eastern part.

5.3.3. Roads and railways

Although this aspect of heritage predates the establishment of Gouda, it is probably for reasons of transport that the vicinity of Gouda is most significant in heritage terms. All these features are located to the south of the project area but the direction one faces when travelling out of the Nuwekloof Pass into the Swartland means that the proposed development would be in full view from these early transport routes.

Ross (2002) describes several early passes that existed between the Swartland and the Tulbagh Valley, which was originally known as "Roodezand". The first of these stemmed from the need to find the Khoekhoe people and their herds of domestic stock for trading purposes. An expedition in 1658 was sent out by Van Riebeeck. On this expedition a surveyor named Pieter Potter became the first European to see the Tulbagh Valley when he climbed a ridge some miles the north of the river and gained a view into the valley. He had previously tried to walk through the kloof but found the going too difficult along the river (Mossop, 1927).

In 1699 Willem Adriaan van der Stel, then governor at the Cape, opened the Roodezand valley to farming, naming it "Land van Waveren" after a place in the Netherlands. In order to provide access to the valley a new pass some 4 km to the north was made (Ross, 2002). Mossop (1927) suggests this new pass to have been somewhere near the spot where Potter had ascended. Despite W.A. van der Stel's new name, the name "Roodezand" was still in common use for the Tulbagh valley and the pass became known as "Roodezand Pass". A rather poor pass, it had a very steep slope on its eastern side, was narrow and in places thickly wooded. Ross (2002) notes Kolbe's statement in 1731 that for these reasons wagons were frequently taken apart and carried over the pass before being reassembled on the other side.

Burman (1963) managed to relocate the old pass but found it to be heavily overgrown. This is in keeping with Kolbe's description but a modern aerial photograph shows a very clear track. This clarity may well be as a result of modern use of the track by locals. Burman (1963) describes the track leading northwards from the summit as being cut into the hillside by up to three feet in places. He noted piles of rocks along the roadside and also located a built-up section where the track crossed a water-course. There were even some places where wagon tracks were visible cut into the rocks as is the case, more famously, at the old Gantouw Pass above Gordon's Bay (Orton, 2009).

From Ross's (2002) account that Potter climbed a spur north of the river, the precise location of his climb seems unclear but Burman (1963: 49) states that Potter climbed to "a nek a few miles further north" (of the river) and that "the early travellers followed Potter's route over the top of the range, and this became known as the Roodezand (Red Sands) Pass". Whether these two passes were at one and the same place is thus not known but perhaps the spur referred to by Ross (2002) is the one immediately south of the pass?

As a result of the difficulties associated with the Roodezand Pass, the local farmers tried to improve its quality but no satisfactory solution was forthcoming. They then turned their attention to the river valley and succeeded in creating a road along the northern side of the river that was not too steep. Since it afforded access to the Roodezand, it took on the name of Roodezand Kloof. To avoid confusion the old pass became known as Oude Roodezand Kloof and the new one Nieuwe Roodezand Kloof. The abbreviations Oudekloof and Nieuwekloof soon followed. By the 1760s

⁴ A 1910 survey diagram that will be discussed below mentions 'Porterville Road Station'.

Nieuwekloof had become the primary means of access to the Tulbagh valley (Ross, 2002). A toll was levied as a contribution towards maintenance of the road and this resulted in some farmers still driving their cattle over the old pass to avoid the toll fee (Burchell, 1822). Burchell illustrated the pass as it appeared in 1811 (Figure 10).

Two early travellers who used the pass left the descriptions of it. Carl Thunberg (1793 in Ross, 2002) passed through in 1772 stating that:

“the cleft through which we passed from the sandy plain that lies towards the Cape, but gradually rises until it comes to Roodezand, is one of the few chasms left by the long range of mountains through which it is possible for a wagon to pass, though possibly not entirely without danger. In some places it is so narrow two wagons could not pass each other.”

William Burchell (1822: 137-138), passing through in 1811, described the kloof as:

“a narrow winding defile of about three miles in length, just enough to allow passage for the Little Berg River on each side of which the mountains rise up abruptly and lofty. Their rocky sides are thickly clothed with bushes and trees from their summits down to the water... Along the steep and winding sides, a road has been cut, which follows the course of the river, at a height above it generally between fifty and a hundred feet; in one part rising much higher, and in another, descending to the bottom, and leading through the river, which, at this time, was not more than three feet deep, although often so much swollen by the rains, as to be, for a day or two, quite impassable.”

The remains of this pass, too, were found to be still in existence by Burman (1963), although it was in a very state with low-lying sections washed away and others blocked by tumbled rocks. He also notes the scars of “remskoene”⁵ to be present in places on this pass.

With the renaming of Tulbagh, the pass changed names again, becoming “Tulbagh Kloof”. The drifts that had to be crossed were problematic and in 1855 Thomas Bain examined the kloof recommending an alternative route on the south-western side of the river. This road was built between 1859 and 1860 and carried road traffic for more than a next century thereafter. Bain was also asked to plan a railway through the kloof which he did in 1873 and 1874 (Ross, 2002). The section designed by Bain was part of the Cape Town to Kimberley railway that was constructed in sections up until 1885 (Table 2). Although originally intended to serve the Western Cape farming community, the railway was rapidly extended to Kimberley as a result of the diamond rush. The Nuwekloof section followed a very similar line to the road (Figure 11) and was opened on 1st September 1875, while the final leg to Kimberley was opened prior to final completion on 28 November 1885 (Walker, 2001). The modern road through the kloof was constructed in the 1960s and opened in 1968. The name “Nuwekloof Pass” was chosen for the new road (Ross, 2002).

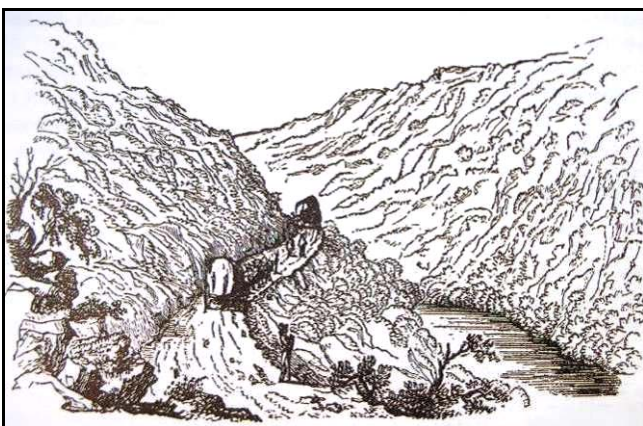


Figure 10: Burchell’s sketch of the Nuwekloof Pass from his 1811 travels (Source: Ross, 2002: 3).

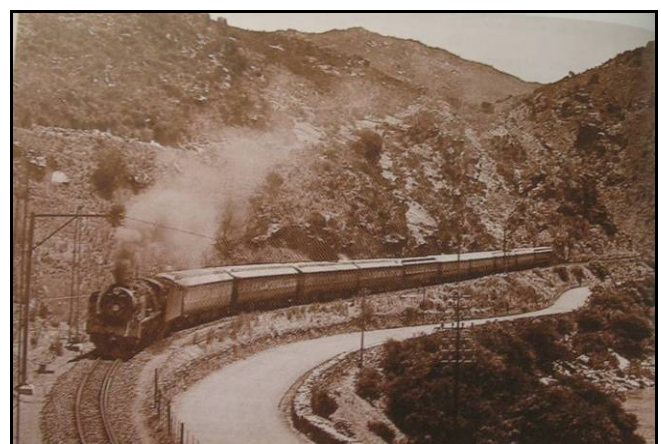


Figure 11: View of Thomas Bain’s road and railway alignments running side-by-side through Nuwekloof (Source: Ross, 2002: 4).

⁵ Remskoene are the iron shoes fitted to the wheels to act as brakes and to protect the wooden wheels from damage on the rough rocks on steep sections of the pass.

Table 2: Development of the Cape Town to Kimberley railway line (Walker, 2001).

Town	Date opened
Paarl	18-03-1863
Wellington	04-11-1863
Tulbagh	01-09-1875
Worcester	16-06-1876
Kimberley	28-11-1885

As stated earlier, Gouda originally served as the railhead for Porterville and was known for this reason as Porterville Road. A new line running from Hermon through Riebeeck Kasteel and Riebeeck West and on to Porterville was opened in 1929 (Siyabona Africa Travel, 2008).

5.3.4. Water infrastructure

A multitude of canals and lei water furrows surround Gouda and Saron. The Voëlvlei Dam to the south of Gouda was built in 1952 and some of the canals and furrows post-date its construction. These include the long channel that runs from a kloof northeast of Saron bringing water to Voëlvlei Dam as well as the shorter one that brings water from a weir on the Klein Berg River. Although their precise age is unknown, they post-date 1952 and are thus not of heritage concern. Some may be as recent as the 1980s.

Others, however, are related to the earlier agricultural activities around the Saron mission station and Gouda vicinity and many were present already on aerial photographs dating from 1938 (Orton, 2008a). Although not structures in the usual sense, they are man-made, greater than 60 years of age and should be considered as protected heritage.

5.4. Built environment

Although most original structures are long gone from Saron, several old buildings of heritage significance do remain. Among these is the now much-altered parsonage - the original manor house of De Leeuwenklip - which probably dates to about 1780. The church of 1853, its hall which began life as the town school, the old mission store and the remnants of a pre-mission water mill (c. 1795) are also of interest in Saron (Fransen, 2006).

The Langverwaght homestead, near Vier-en-twintig-rivieren, dates to around 1840 and another more recent house at Vier-en-twintig-rivieren is also of some heritage value (Fransen, 2006).

Gouda is not particularly old but it is quite likely that structures greater than 60 years of age and of heritage conservation value are present in the town. Farming has certainly been taking place in the region for a long time and farm complexes will certainly include buildings of value.

6. FINDINGS

6.1. Archaeology

6.1.1. Early and Middle Stone Age

Early Stone Age (ESA) material was common but its density varied considerably according to location. In general, the eastern side of the farm had very few artefacts, while in the west artefacts were present throughout the area but more frequently encountered towards the north than the south (Figure 12). These occurrences are not really 'sites' in the typical sense, since the

material is largely in secondary context having been left on the surface after erosion of the overlying deposits. However, in some areas there were particularly high concentrations of artefacts which must broadly reflect the original locations of concentrations after they were made. Figure 12 shows the locations of these concentrations. In general, ESA material in such contexts is considered of little heritage value but the relatively high densities of artefacts encountered in places around Gouda suggest this not to be the case here – some mitigation might be appropriate if these scatters were to be disturbed.

In the areas where ESA artefacts were denser there were certainly also many more isolated artefacts. However, the good scatters were obvious when one encountered them. Figures 13 to 20 show examples of artefacts and hand-axes found at such localities, while Figure 21 shows a selection of cobble cores from a scatter that was composed almost exclusively of such artefacts. Why such a high frequency of cores should be present in the absence of large numbers of flakes is unknown. A peculiar find was an eroding sand dune close to the Klein Berg River and which contained much river gravel and weathered artefacts. These artefacts included a large number of relatively small flakes and very few larger flakes or cores (Figures 22 & 23). Whether these are ESA or MSA is unknown but, given the paucity of larger artefacts, they may well be MSA. In one or two areas there were occasional flakes which, from their smaller size and reduced patination, may well have been MSA. In general, however, it seems that the MSA is poorly represented on the landscape.

6.1.2. Later Stone Age

Two small LSA scatters were found on the banks of the Berg River in the far west of the site. Neither was dense. Both included flaked artefacts in quartz and one had a small quartzite hammer stone and one quartzite flake present (Figures 24 & 25).

A small number of isolated quartz flakes were found in sandy ground close to the proposed substation location. They were too dispersed to be able to distinguish any source areas but with the bush present there it is quite likely that an LSA site is present in the immediate vicinity.

A light scatter of LSA artefacts was also observed around a small rocky koppie on the southern outskirts of Saron. The koppie was inspected for rock art but found to contain none.

6.1.3. Historical archaeology

No historical artefacts were seen anywhere in the study area.

6.1.4. Graves

No graves were seen in the study area and the farmer commented that no graves were known to be present on the farm at all. Some of the sandy areas close to the river may well contain unmarked pre-colonial graves but, given their proximity to the river, these areas are unlikely to be disturbed by the proposed development. Unmarked graves are extremely unlikely in the areas with shale and cobble substrates.

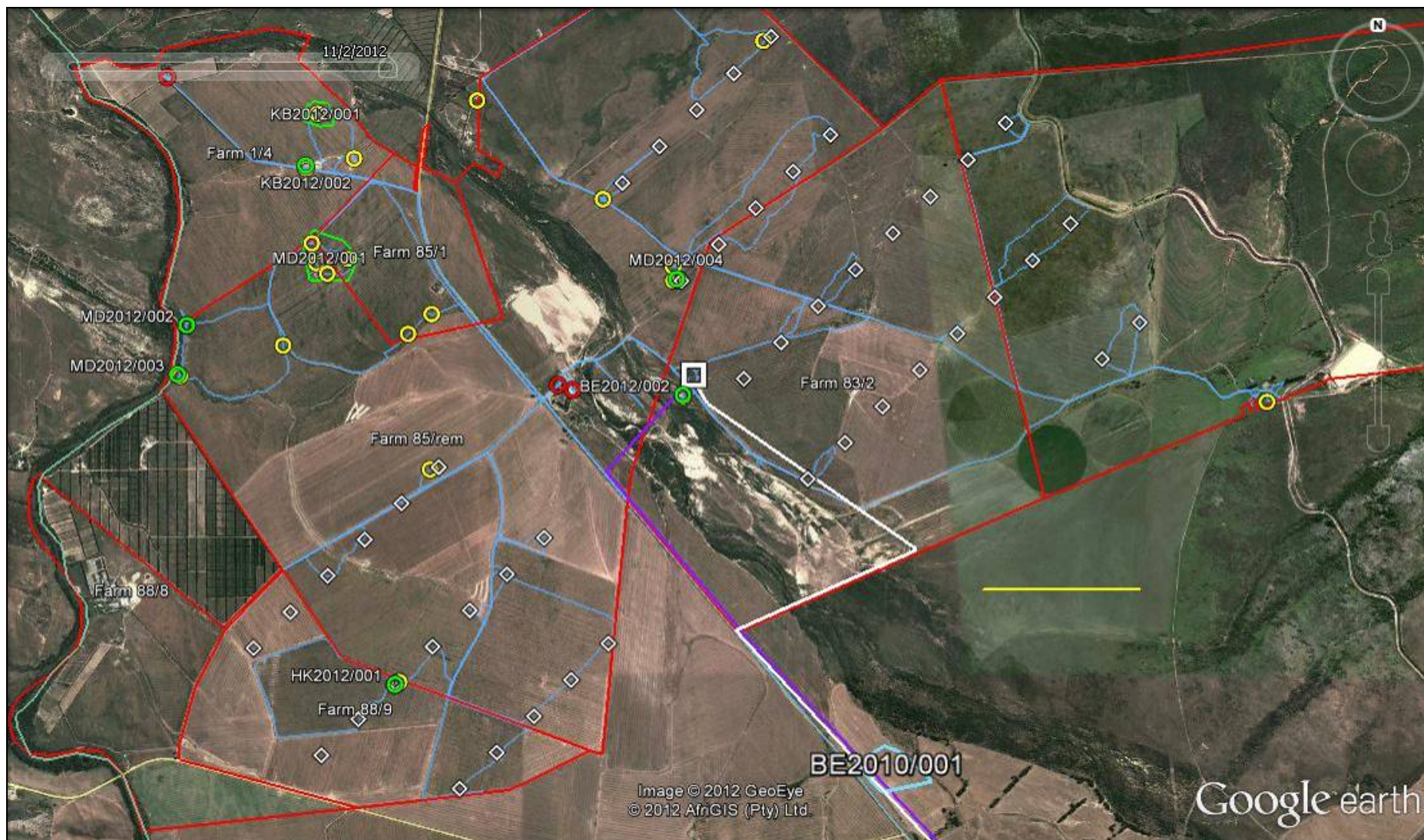


Figure 12: Aerial view of the study area showing the locations of the dense ESA scatters. Green circles and polygons denote archaeological sites, yellow circles denote other archaeological occurrences and red circles denote built environment features greater than 60 years of age. The white diamonds are the turbine locations, the white square the substation and the blue lines the walk-paths from the survey. The yellow bar for scale at lower right is 1 km long.



Figure 13: Artefacts from point 001 (MD2012/001).



Figure 14: The hand-axe from point 001 (MD2012/001).



Figure 15: Artefacts from point 005 (HK2012/001).



Figure 16: The hand-axe from point 005 (HK2012/001).



Figure 17: The hand-axe from point 006 (HK2012/001).



Figure 18: The hand-axe from point 023 (MD2012/004)



Figure 19: The hand-axe from point 023 (MD2012/004).



Figure 20: The hand-axe from point 023 (MD2012/004).



Figure 21: A selection of cobble cores from point 022 (MD2012/004).



Figure 22: The location of point 019 (BE2012/002).

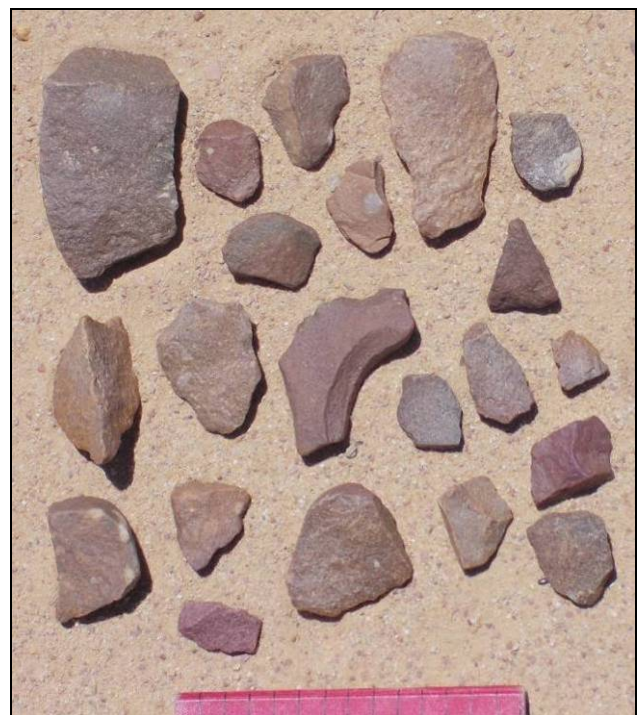


Figure 23: Artefacts from point 019 (BE2012/002).



Figure 24: The location of the LSA artefacts at point 012 (MD2012/002).



Figure 25: Artefacts from point 012 (MD2012/002). At left is a quartzite hammer stone.

The proposed power line routes along the R44 to the proposed substation to the south will cross through one of the areas with a high concentration of ESA artefacts as identified by Orton (2010). However, the excavation of a few power line pylons in that area is not deemed to be of any significance and is not considered any further here.

6.2. Built environment

Figure 12 shows the location of the two old structures in the Kleinberggrivier Farm werf (red circles in the centre of the image) and those at Die Mond (upper left hand corner). The structures in Saron will not be given individual consideration here since they are relatively far from the proposed development. However, as a whole they will be considered under historical settlements below.

The Kleinberggrivier werf has two old buildings. The main house (Figure 26) is large and it is not possible without a detailed examination to tell its original form. It has almost certainly been added to over the years but its primary plan form is still the same as it was in 1938 (Figure 27). Tim Hart (pers. comm. 2012), who has been inside the house, confirms that there is virtually no original fabric remaining visible. The second structure of antiquity is a store room/outbuilding that likely dates to the late 19th century or early 20th century. It is in very poor condition and of little heritage value (Figures 28 & 29). A few other buildings are present in the 1938 photograph but have been demolished now but one small outbuilding east of the main house may still be the same as that present today.



Figure 26: The main house on the Kleinberggrivier farm werf. The inset shows the roof plan of the house with the front to lower left.



Figure 27: Extract from the 1938 (left) and modern (right) aerial photographs showing the changes to the farm werf at Kleinberg. The two house and shed described above are indicated.



Figure 28: West side of the outbuilding at Kleinberg.



Figure 29: The south side of the outbuilding at Kleinberg.

Two old buildings occur at the Die Mond werf. The werf is situated at the junction of the Kleinberg and Berg Rivers, hence its name. The main house (Figure 30), despite having been modified and added to at various times, retains enough original features to indicate a late 19th century age. There are differing roof heights which allows for the possibility that the core is older with the front and back wings having been added later. The outbuilding/barn located to the west of the main house is also of 19th century age. Its original core is obvious with the lean-tos having been added later (Figure 31). It is apparent from Figure 32 that old structures have been removed from this werf but the main house and the shed are clearly visible.



Figure 30: The main house at Die Mond. The inset shows the roof plan with the front at the bottom.



Figure 31: The outbuilding/barn at Die Mond.



Figure 32: Extract from the 1938 (left) and modern (right) aerial photographs showing the Die Mond farm werf.

6.3. Historical settlements

The village of Saron was originally a mission town established on the farm De Leeuwenklip by the Reverend JH K lpmann in 1846. In 1852 the Rhenish Missionary Society took control of the settlement but it is now under the Dutch Reformed Church (Fransen 2004). Fransen (2004) notes that, in contrast to other mission towns, Saron has been much altered over the years. This was firstly due to dilapidation, then to modernisation and finally the village suffered a degree of earthquake damage in 1969. Nevertheless, structures dating to the mid-19th to early 20th centuries are scattered throughout the main part of the town (Figure 33). These range from the main mission church to commercial stores to large residential houses and many small cottages (Figures 34 to 39). Fransen (2006: 146) states of Saron that "of all mission villages, Saron near Porterville – once Rhenish, now Dutch Reformed – has perhaps lost its character most completely, though it retains a much-altered church of 1853, and a parsonage that was once the original farmhouse of De Leeuwenklip retaining a splendid gable of c.1780." This may be, but nevertheless, the old part of the village currently has a pleasant rural, leafy character which should be preserved. The difference between this original part, which was no doubt originally laid out to promote subsistence agriculture – and the new "low-cost housing" part of town is obvious (Figures 40 & 41).



Figure 33: Aerial view of Saron showing the approximate positions of mid-19th to early 20th century buildings (red circles). Note that these are just a few that were marked during the survey and that many roads were not travelled. The yellow bar for scale is 500 m long.



Figure 34: View southwards of the church, parsonage, hall and their surrounding wall.



Figure 35: The rear of the parsonage.



Figure 36: The mission church.



Figure 37: A commercial store in an art deco style.



Figure 38: A 19th century house close to the mission church.



Figure 39: An early 20th century or possibly late 19th century house with later modifications.



Figure 40: Aerial view of part of the old village. **Figure 41:** Aerial view of part of the new area.

To the south of the old part of Saron lies the main mission area. Comprised of the church, its hall, the parsonage (original farmhouse), the walled cemetery and a few other older buildings, this area has a spacious feel to it with large open spaces and many tall trees (Figures 34, 42 & 43).



Figure 42: View eastwards towards the central mission area showing the church and its walled garden.

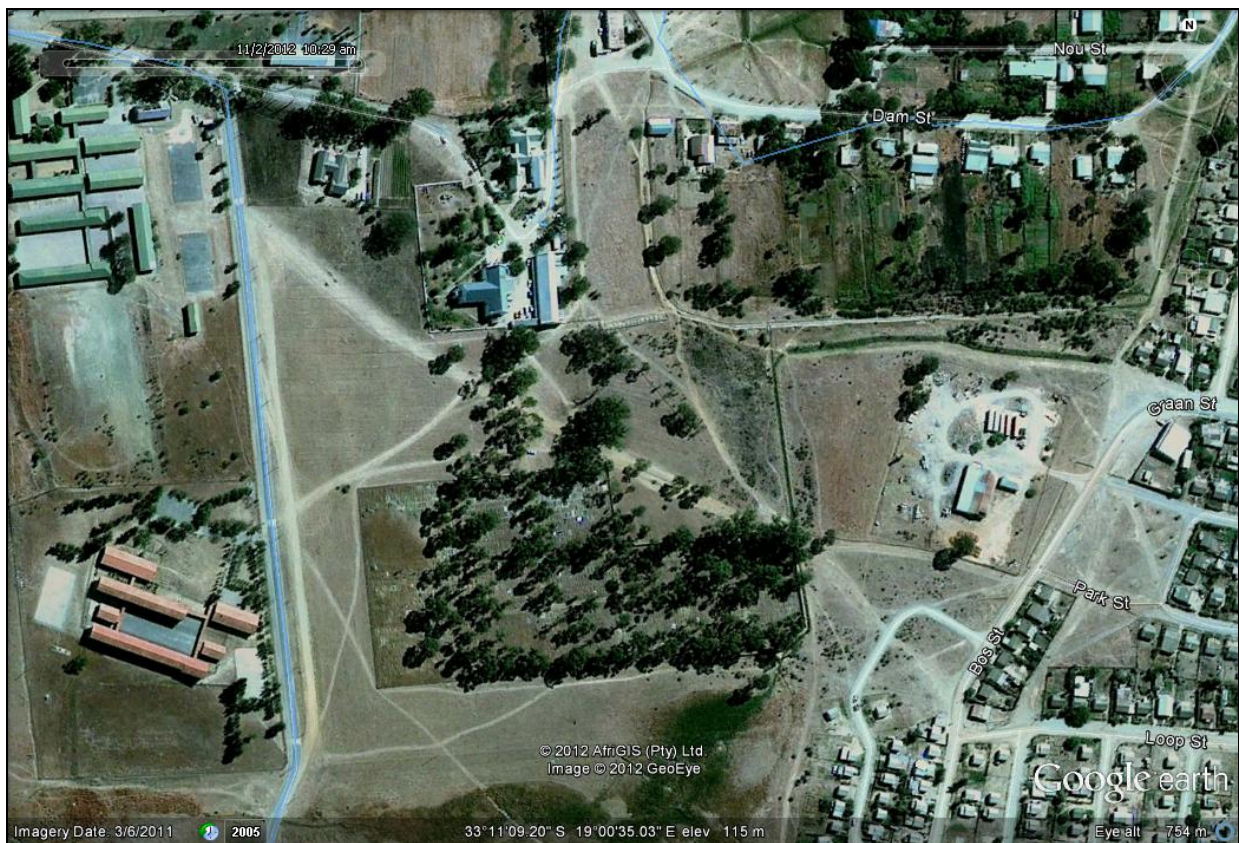


Figure 43: Aerial view of the main mission area on the southern side of the village. The T-shaped church lies in the centre, the hall to its east, the H-shaped parsonage to its north and the large walled cemetery to the south. The many large trees are obvious.

It is the central mission area and accompanying old village area to its north as described here that are of heritage significance and which should be protected from undue visual impacts. Although no visual specialist study was requested by HWC for the proposed WEF discussed here, it should be seen as an important component in the decision-making process. The scoping VIA indicates that the entire village of Saron lies well within the core area of visual impact (<5km from the WEF) and will be visually exposed to turbines (Du Plessis 2012). However, the many trees in the village will mitigate this impact to a large degree.

Although a few buildings undoubtedly predate 1900, the village of Gouda appears not to have been present as a settlement prior to this time. The majority of buildings are quite recent and the town has no significance as a historical settlement.

6.4. Cultural landscapes

The historic settlement at the heart of Saron is itself a cultural landscape. Despite substantial increases to the town's footprint in recent years, the original core (Figure 44) is still clearly evident today (see Figure 33). It is characterised by large trees, quaint houses – many with old fabric – and a reasonable density of early dwellings. A low, rocky ridge lies directly between Saron and the proposed WEF (Figure 45). This ridge will, to some degree, shield the town from visual impacts associated with the WEF, although the turbines will still be visible above it. The nearest turbine will be 2.6 km from the new township and 3.3 km from the historic core of Saron. Crucially, the core area has many large trees (Figures 46 & 47) which contribute to the quality of the landscape and greatly reduce the length of views from within the village. The trees would also serve to shield the old village from the proposed WEF to some degree (Figure 48). Figure 46 is a view from the rocky ridge to the south of the town and shows the marked contrast between the core historical settlement and the newly laid out high density township settlement to its south. The new township has, to some degree, detracted from the quality of the urban cultural landscape.

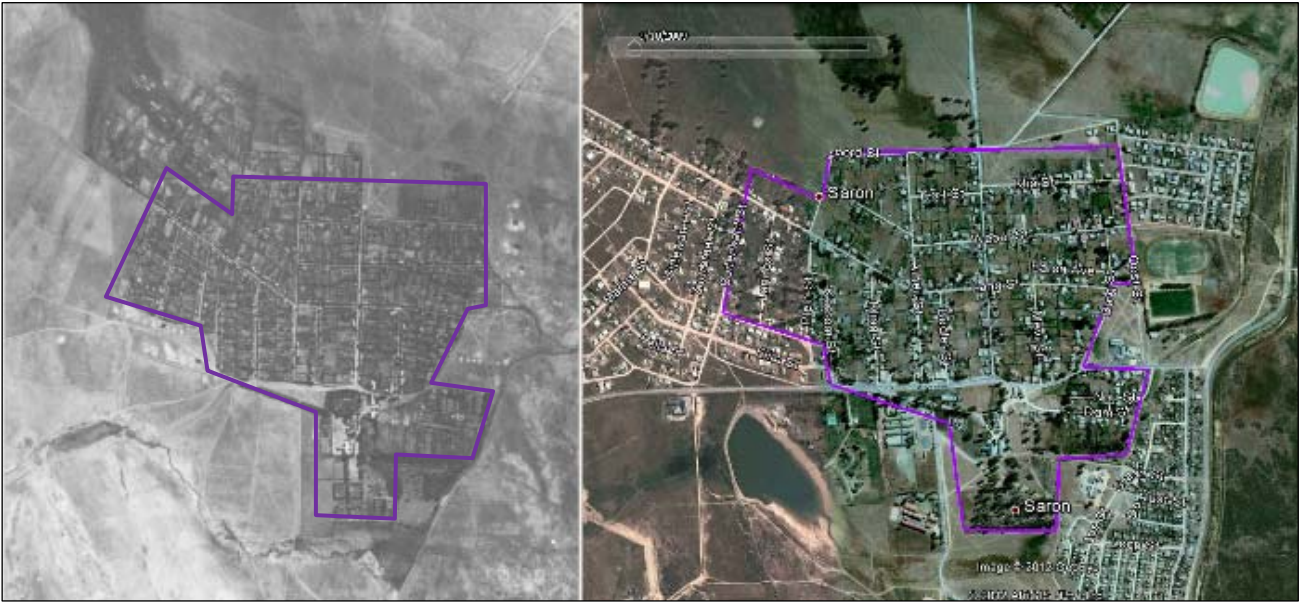


Figure 44: 1938 (left) and modern (right) aerial photographs of Saron with the historic core area outlined in purple. It is clear that the village was focused on agriculture but today, sadly, the substantial agricultural lands to the northwest of the town have fallen into disuse.



Figure 45: View north-eastwards from the northernmost part of the study area. The positions of the historical core (above the red line), and western addition to Saron (orange line) are indicated, as is the position of the rocky ridge (green line).



Figure 46: View towards the northeast from the rocky ridge south of Saron. The historic core of the village lies among the many trees, while the newer township developments are to the south (right and side in this image) and west (barely visible behind the dam in picture).

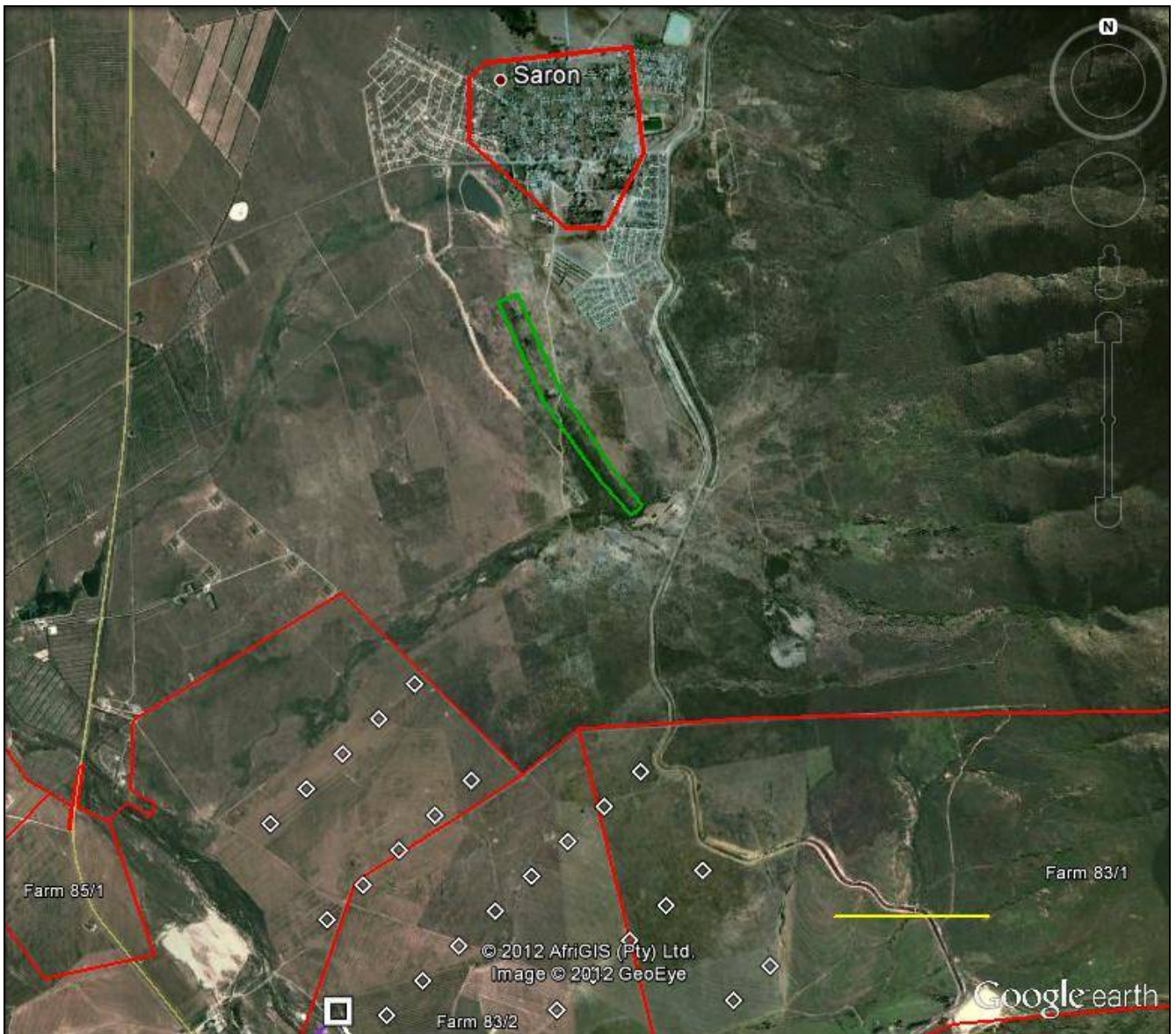


Figure 47: Aerial view of the northern part of the study area showing the relationship between the historic core of Saron (red polygon in the north) and the proposed wind turbine positions (white diamonds). The green polygon in the middle delimits the rocky ridge and the yellow bar for scale at lower right is 1 km long.



Figure 48: View southwards towards the proposed WEF (behind the rocky ridge and some 3.3 km from the photographer) from within the walled garden at the mission church.

However, taking the Figure 48 view as an example, a scale drawing suggests that a viewer standing at 100 m above sea level (the approximate elevation of the church), looking towards the ridge which is approximately 130 m above sea level and 1.2 km distant would see the top of a 100 m high tower (and, obviously, all of the blade length) standing on land at 90 m above sea level and at about 3.4 km distance. The scoping VIA suggests that this distance is still within the core area of impact (<5km) and that in general turbines in this landscape would be comfortably visible within the medium range of 5 km to 10 km (Du Plessis 2012). This view would only be from a few specific locations where trees do not shield the WEF – the vast majority of viewpoints in the village would be completely protected from seeing the WEF.

The other cultural landscape of concern is the greater Swartland agricultural area that stretches more than 60 km to the north, west and south. In this regard it is pertinent to know that the Gouda WEF has been authorised and its construction will begin in early 2013. It lies to the south of the proposed Zen WEF and a further WEF has been applied for immediately to its west. The Gouda WEF will introduce 46 turbines to the landscape. The guideline document for introducing wind energy to the Western Cape suggests that it is best to place wind energy developments in clusters far flung from one another rather than having them spread across vast open landscapes (CNdV 2006). With the exception of a few small mountains, the Swartland is relatively flat and certainly has an appearance of vastness (Figures 2, 3 & 49). It is thus advisable to keep wind turbines close together and, in the light of the pending construction of the Gouda WEF, the present location thus seems appropriate.



Figure 49: View towards the south from the rocky ridge south of Saron. The proposed Zen WEF will lie between 2.3 and 7.5 km from the photographer within the pale brown wheat fields visible close to the skyline.

6.5. Scenic routes

The scoping VIA has determined that many roads will be impacted by the proposed WEF. However, only some of these should be considered as scenic routes. These include the R44 that bisects the site, the R46 that runs through Nuwekloof to the south and the R311/R46 that runs from northwest to southeast from Moorreesburg through Riebeeck West and Riebeeck Kasteel to the R44 well south of the site. The N7 is also a scenic route but is located – at its nearest – some 26 km from the proposed facility.

The R44 that runs approximately north-south between Gouda to the south and Porterville to the north will be the most heavily affected scenic route. Importantly, the presently proposed WEF will be located on both sides of this road which means that one would travel through the middle of the facility if it were constructed (Figure 50). In contrast, the Gouda WEF to the south will be built on the east side only, although another WEF has been proposed immediately over the road to the west and is currently being assessed for authorisation by DEA&DP. Should both be constructed then impacts will be much the same as for the proposed Zen WEF.

The R46 out of Nuwekloof (itself a significant heritage resource because of the early transport infrastructure it contains) will also be affected. However, it should be borne in mind that the Gouda WEF will be constructed immediately in front of the proposed Zen WEF and thus no new impact will be experienced.

The R46/R311 at its nearest is 13.5 km southwest of the study area and will not be significantly impacted due to the distance. The turbines, although visible, would be very small in the distance.

The important aspect here is the clustering of turbines as noted by CNdV (2006). This refers to cumulative impact. CNdV (2006) recommends that clusters of wind turbines be located a minimum of 30 km and preferably about 50 km apart in appropriate landscapes. The next closest clusters (assuming construction) would be around the town of Moorreesburg, just less than 30 km to the west and Wolseley some 28 km to the southeast. Although these distances are not ideal, a precedent for WEF construction has already been set around the Saron-Gouda area by the existing authorisation of one wind energy facility. It seems best to add to this cluster rather than spreading more widely as this would contain the already unavoidable visual impacts to the scenic route.

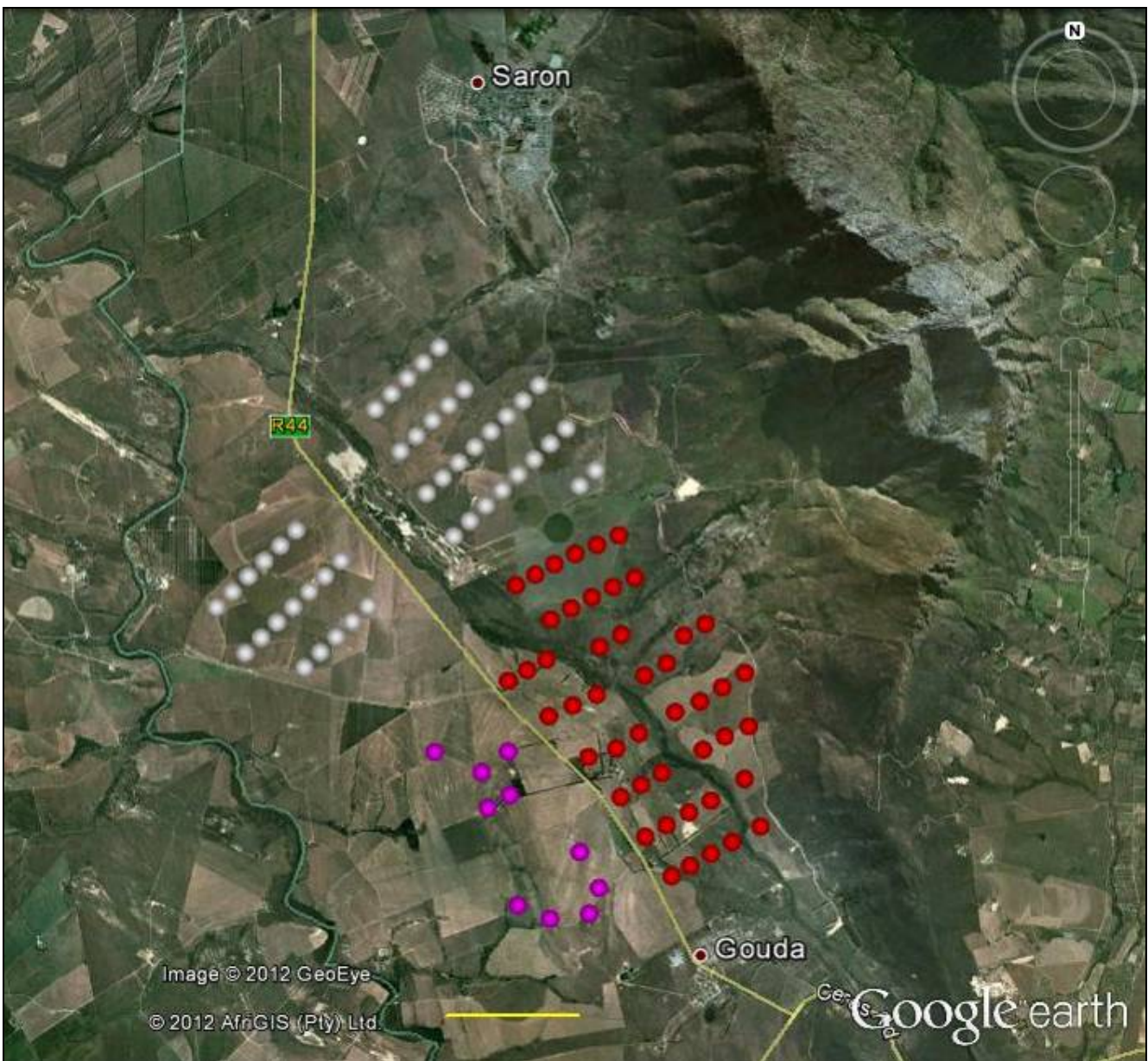


Figure 50: Aerial view of the study area showing the proposed Zen WEF, (white dots), the proposed iNca Gouda WEF (pink) and the Gouda WEF (red) which is due for construction in early 2013. The yellow bar for scale at the bottom is 2 km long.

7. GRADING

Following the guidelines of Winter and Baumann (2005: box 5), the archaeological resources and built environment resources are provisionally graded as shown in Table 3 below. Grading is a means of generalising the degree of heritage significance attached to the resources present. The archaeological resources are of limited significance and do not merit any grading. The farm houses are altered to varying degrees but that at Die Mond appears to contain more original fabric and/or joinery and, upon inspection of its interior, may in fact merit a 3B grading. Furthermore, its context is better with the Kleinberggrivier werf having had modern storage facilities and farm outbuildings added to it. While some individual structures within the historic settlement of Saron likely merit a 3A grading, the majority of its historical structures should probably be 3C or ungraded. However, the overall context of the historic core of Saron is deemed of reasonable significance and might be considered as a grade 3B heritage resource.

Table 3: Provisional grading of heritage resources in the ZEN WEF study area.

Heritage resource	Provisional grading
MD2012/001	ungraded
MD2012/002	ungraded
MD2012/003	ungraded
MD2012/004	ungraded
KB2012/001	ungraded
KB2012/002	ungraded
HK2012/001	ungraded
BE2012/002	ungraded
Kleinberggrivier farmhouse	3C
Kleinberggrivier outbuilding	ungraded
Die Mond farmhouse	3B/C
Die Mond outbuilding	ungraded
Saron historical settlement as a whole	3B

8. ASSESSMENT OF IMPACTS

8.1. Archaeology

Impacts to archaeological resources will undoubtedly occur but these will not be of high significance. Furthermore, mitigation can be easily accomplished where this might be required. Should dense scatters of ESA artefacts be impacted then mitigation should entail *in situ* recording of the material to create a record of the artefacts and technology. No LSA sites were found in the immediate WEF area but should any be located later they would possibly require some degree of formal excavation. Table 4 formally evaluates the potential impacts to archaeology which are found to be of medium significance before mitigation and low after mitigation.

Table 4: Assessment of archaeological impacts.

Nature: Destruction and/or disturbance of archaeological sites and/or artefacts.		
	Before mitigation	After mitigation
Extent:	Local (1)	Local (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Low (4)	Small (0)
Probability	Probable (3)	Probable (3)
Significance	Medium (30)	Low (15)

Status	Negative	Negative
Reversibility	No	
Irreplaceable loss of resources?	Yes	
Can impacts be mitigated?	Yes	
Mitigation: In situ recording of ESA artefacts and excavation of LSA sites (if ever found to be impacted).		
Cumulative impacts Other similar archaeological material would be impacted by other similar developments in the area but, given the widespread nature of this material, cumulative impacts are not significant.		

8.2. Built environment

No built environment elements will be directly impacted. However, indirect (visual) impacts will be felt by farm houses and outbuildings in the vicinity. The houses at the Kleinberggrivier and Die Mond werfs are most significant but still do not attract high gradings. For this reason, visual impacts to them and their contexts are not seen as very significant. The house at Die Mond will be 2.9 km from the nearest turbine on the current layout, while the Kleinberggrivier farmhouse will be 930 m from its nearest turbine. Neither house is of suitable merit to prevent construction or to suggest that larger buffers should be incorporated – these buffers are quite adequate. No further mitigation measures are suggested. Table 5 assesses the impacts to the built environment and finds them to be of medium significance. This is perhaps slightly inflated by the system used to calculate significance due to the high score for duration of impact.

Table 5: Assessment of built environment impacts.

Nature: Reduction in quality of the visual context of heritage structures.		
	Before mitigation	After mitigation
Extent	Local (2)	Local (2)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Probability	Definite (5)	Definite (5)
Significance	Medium (50)	Medium (50)
Status	Negative	Negative
Reversibility	Yes, reversible when turbines are removed	
Irreplaceable loss of resources?	No	
Can impacts be mitigated?	No	
Mitigation: None suggested		
Cumulative impacts Other similar developments will not significantly alter the impacts to these resources and cumulative impacts are thus not significant.		

8.3. Historical settlements and cultural landscapes

Saron is a historical settlement whose context and character retain heritage significance. Furthermore, there are several individual structures of significance within the core part of the village. The key aspect of the impacts to this settlement is visibility of the turbines. Much of the settlement is visually protected at the very local scale due to the many trees that form part of its structure and character. It is only on the very southern limits of the village, close to the historic mission station and graveyard, that one will be able to see the uppermost part of the turbines. The only mitigation that could occur would be to reduce the number of turbines on high ground in the eastern part of the town so as to reduce the overall visibility of turbines from the mission station. Table 6 rates the impacts formally, finding them to be of medium significance before mitigation and low significance should mitigation as suggested be applied.

Table 6: Assessment of impacts to historical settlements and cultural landscapes.

Nature: Impact on historical settlements and cultural landscapes.		
	Before mitigation	After mitigation
Extent	Regional (3)	Regional (2)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Minor(2)
Probability	Definite (5)	Highly probable (4)
Significance	Medium (55)	Low (24)
Status	Negative	Negative
Reversibility	Yes, reversible when turbines are removed	
Irreplaceable loss of resources?	No	
Can impacts be mitigated?	Yes	
Mitigation: Move turbines from high ground to reduce visibility from the mission station		
Cumulative impacts: The other proposed similar facilities are located to the south and will not affect Saron.		

The core historical area of Saron is considered an important cultural landscape and its impacts will be the same as those identified above for the historical settlement. The wider Swartland cultural landscape will also be affected but with lesser significance due to its great size and the proximity of the Gouda WEF that is shortly due for construction. No specific rating table is supplied since the ratings in Table 6 are appropriate for cultural landscapes too.

8.4. Scenic routes

Scenic routes will be impacted by the proposed WEF. However, the clustering of turbines from the three facilities planned in this area helps to centralise the impacts to one area and the impacts that the Zen WEF will have need to be considered in the light of these other facilities. Due to the nature of the land – with the only large visual buffer (the mountains) being located behind the WEF relative to the scenic routes – no mitigation will be possible for scenic routes. Table 7 assesses the impacts finding them to be of medium significance.

Table 7: Assessment of impacts to scenic routes.

Nature:		
	Before mitigation	After mitigation
Extent	Local (2)	Local (2)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Moderate (6)
Probability	Definite (5)	Definite (5)
Significance	Medium (60)	Medium (60)
Status	Negative	Negative
Reversibility	No	
Irreplaceable loss of resources?	No	
Can impacts be mitigated?	No	
Mitigation: None suggested		
Cumulative impacts: The addition of a further WEF will increase the impacts but given that all are in a cluster this is not a highly significant increased impact.		

9. CONCLUSIONS

Based on the layout assessed here, impacts to heritage resources are not likely to be very significant and no “red flag” issues have been identified. Archaeological resources of medium to low significance will be directly impacted, while buildings, cultural landscapes and scenic routes will all receive indirect impacts of medium to low significance. It is concluded that, on heritage issues, the proposed WEF may proceed.

Archaeological mitigation, if required, could be easily carried out under a permit issued to the archaeologist by Heritage Western Cape. Since no other heritage resources will be directly impacted no other permits would be required for implementation of the proposed development.

10. RECOMMENDATIONS

It is recommended that, subject to the agreement of Heritage Western Cape, the proposed project should be allowed to proceed. However, the following conditions should be adhered to:

- If any change to the layout is made pre-construction then a follow-up inspection of the new layout should be made, particularly for archaeological resources which are point-specific on the landscape;
- If possible, turbines on high ground within close visual proximity to Saron should be relocated to less prominent positions;
- Buffers around historical houses should be a minimum of 500 m but preferably as large as possible;
- The final layout should seek to be as consolidated as possible in order to maintain a tight cluster with the other proposed facilities in the area (the present layout does this quite well); and
- If any burials are encountered during any stage of the development then work in the immediate vicinity should be stopped, the remains protected and the finds reported to HWC or an archaeologist. Exhumation would be required at the expense of the developer.

11. ENVIRONMENTAL MANAGEMENT PROGRAMME

Input to the EMP is only required for archaeological resources as other heritage resources will not be directly impacted.

OBJECTIVE: Reduction of archaeological impacts

Project component/s	Turbines, power lines, substation and roads
Potential Impact	Destruction of/damage to archaeological resources
Activity/risk source	Construction of the proposed WEF
Mitigation: Target/Objective	Recording of the archaeological resources by an archaeologist

Mitigation: Action/control	Responsibility	Timeframe
In situ recording of artefact scatters to be impacted	Archaeologist	Pre-construction

Performance	Archaeological resources successfully mitigated prior to
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Indicator	construction
Monitoring	None required after mitigation

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